

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 H01M8/10 C07D235/10 C07D271/10 C07C311/03 C08F28/02
H01M8/02

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H01M C07D C07C C08F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, CHEM ABS Data, COMPENDEX, PAJ, BEILSTEIN Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|--|-----------------------|
| P,A | EP 1 359 142 A (ASAHI CHEMICAL IND) 5 November 2003 (2003-11-05) paragraph [0482] page 56 - page 59; examples 8,9,14,16,17 | 1-60 |
| A | & WO 02/062749 A (KOGA TAKEHIRO ; HOSHI NOBUTO (JP); IKEDA MASANORI (JP); ASAHI CHEMICAL) 15 August 2002 (2002-08-15) | |
| A | ----- WO 03/034529 A (DU PONT ; HOWARD EDWARD (US)) 24 April 2003 (2003-04-24) claims | 1-60 |
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| | ----- -/-- | |

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

*** Special categories of cited documents :**

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "&" document member of the same patent family

Date of the actual completion of the international search

27 October 2004

Date of mailing of the international search report

28. 01. 2005

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Kollmannsberger, M

INTERNATIONAL SEARCH REPORT

Inter

pplication No

PC1/US2004/020703

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|---|-----------------------|
| A | PATENT ABSTRACTS OF JAPAN vol. 2003, no. 07, 3 July 2003 (2003-07-03) & JP 2003 086202 A (CENTRAL GLASS CO LTD; TOYOTA CENTRAL RES & DEV LAB INC), 20 March 2003 (2003-03-20) abstract ----- | 1-60 |
| A | US 6 264 857 B1 (KREUER KLAUS-DIETER ET AL) 24 July 2001 (2001-07-24) claim 10 ----- | 1-60 |
| A | US 6 319 428 B1 (ARMAND MICHEL ET AL) 20 November 2001 (2001-11-20) examples 35,36 ----- | 1-60 |
| A | XU Y ET AL: "Study on the Reactions of Fluoroalkanesulfonyl Azides with Pyridine and its Derivatives" TETRAHEDRON, ELSEVIER SCIENCE PUBLISHERS, AMSTERDAM, NL, vol. 55, no. 48, 26 November 1999 (1999-11-26), pages 13725-13734, XP004181511 ISSN: 0040-4020 compounds 7,8,11,12 ----- | 1 |

INTERNATIONAL SEARCH REPORT

In

International application No.
PCT/US2004/020703

Box II Observations where certain claims were found unsearchable (Continuation of Item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of Item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:
1-23, 24-58(in part), 59-60

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-23, 24-58 (in part), 59-60

compounds according to structures (I) and (II), polymers (III) therefrom; membranes, electrochemical cells and electrocatalysts containing these membranes

2. claims: 24-58 (in part)

membranes containing small molecules (IV) and electrochemical cells containing such membranes

INTERNATIONAL SEARCH REPORT

Intern:

Application No

PCT/US2004/020703

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Application No

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